Exploring Zabbix's IPv6-Only Network Monitoring Capabilities

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Edition: Communications Area
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May 2024

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Introduction

In this article, I wish to highlight the importance of continuous monitoring in our rapidly evolving world. We will focus our attention on Zabbix, a GNU (GLPv2)-based monitoring tool, and its ability to monitor IPv6-only environments, an increasingly important topic as IPv6 adoption advances. In this article, we will explain how Zabbix can be used to overcome the challenges of monitoring IPv6-only networks and ensure a smooth transition to this new era of networking.

Acknowledgment

I would like to express my sincere gratitude to Alejandro Acosta, a great teacher who largely inspired me to write this article. His extensive knowledge in the world of IPv6 networks served as inspiration to prepare this document. His dedication to teaching and sharing his knowledge has been truly enriching. Thank you, Alejandro, for your support!

Let's start with a bit of history.

What is Zabbix?

Zabbix is an enterprise grade, open source, distributed monitoring solution created by Alexei Vladishev. It allows us to monitor multiple network parameters, as well as the health and integrity of servers, virtual machines, databases, websites, and more. Zabbix allows using multiple notification channels, with email being one of the most common.

The features offered by Zabbix include the automatic detection of IPv6 devices and services on the network. Additionally, its interface is very intuitive and user friendly, which makes it easier to visualize the data, add new devices, and configure alerts and notifications. Zabbix's centralized management allows users and administrators to monitor multiple IPv6 devices and services from a single interface.

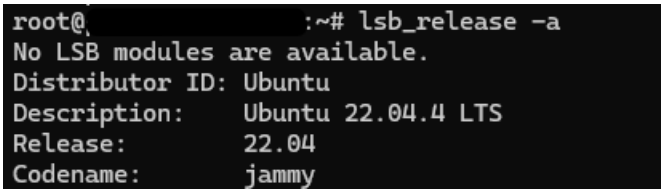
Its scalability allows Zabbix to adapt to IPv6 networks of any size, making it easy to manage everything from small business networks to complex networks and network infrastructures.

First Steps

Moving on to a more technical aspect, we will now recreate a simple scenario where our Zabbix server will conduct basic ICMP checks towards remote IPv6 addresses.

Our server was installed in an Ubuntu 22.04 environment, as we can see in the following screenshot. Using our SSH connection, we execute the following command to verify our distribution:

```
lsb_release -a
```



Next, we can verify that our server has a correctly assigned IPv6 address. To do this, we can use the following command:

```
ip addr show | grep inet6
```

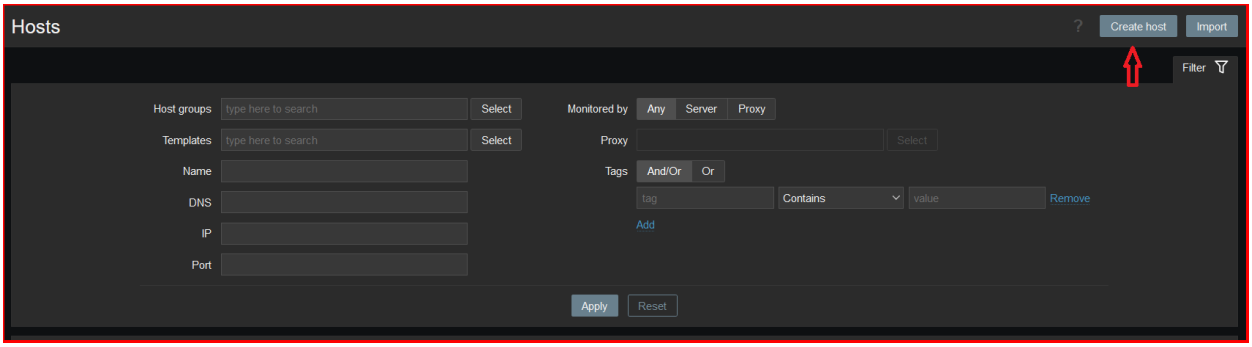
To run ping tests on IPv6 addresses from our server, we will use the **ping6** command and the IPv6 address or domain to which we want to run the test. In this case, we will use two well-known domains, which we will then include in our Zabbix web interface.

```
root@[redacted]:~# ping6 www.google.com
PING www.google.com (2800:3f0:4005:40e::2004): 56 data bytes
64 bytes from 2800:3f0:4005:40e::2004: icmp_seq=0 ttl=112 time=98.263 ms
64 bytes from 2800:3f0:4005:40e::2004: icmp_seq=1 ttl=112 time=104.212 ms
64 bytes from 2800:3f0:4005:40e::2004: icmp_seq=2 ttl=112 time=93.923 ms
64 bytes from 2800:3f0:4005:40e::2004: icmp_seq=3 ttl=112 time=95.209 ms
```

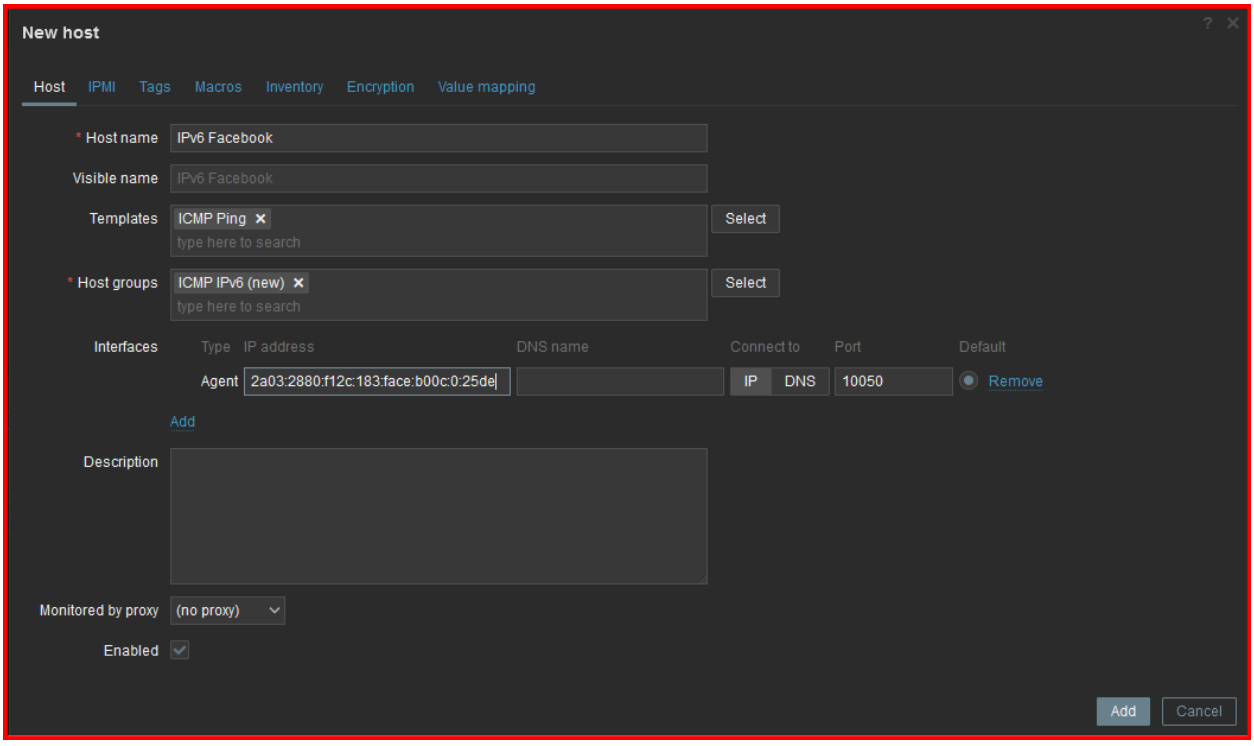
```
root@[redacted]:~# ping6 www.facebook.com
PING star-mini.c10r.facebook.com (2a03:2880:f12c:183:face:b00c:0:25de): 56 data bytes
64 bytes from edge-star-mini6-shv-02-mia3.facebook.com: icmp_seq=0 ttl=53 time=56.625 ms
64 bytes from edge-star-mini6-shv-02-mia3.facebook.com: icmp_seq=1 ttl=53 time=53.617 ms
64 bytes from edge-star-mini6-shv-02-mia3.facebook.com: icmp_seq=2 ttl=53 time=52.746 ms
64 bytes from edge-star-mini6-shv-02-mia3.facebook.com: icmp_seq=3 ttl=53 time=50.584 ms
```

Zabbix Web Interface

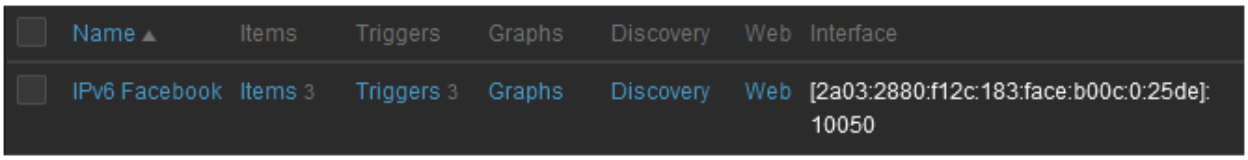
As the results of our previous tests were positive, we can begin including ICMP tests through our Zabbix web interface. To do this, open Zabbix in your preferred browser and go to the "**Settings**" section in the left panel, where the following screen will be displayed. Here, we will create a new host as shown in the image below.



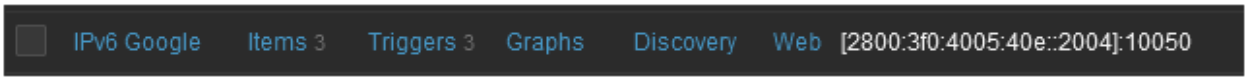
A new screen will then appear where we must enter the required information to create the desired host, as shown in the following screenshot:



It should be noted that Zabbix comes with pre-loaded templates. If we haven't created a group yet, in the "**Host groups**" field we can specify the desired name for this group of devices. Finally, in the **Interfaces** section, we must select one of the four options provided. For our purposes, we selected the "**Agent**" option, and all that's left is to click the **Add** button. With this, we will have set up our monitoring for an ICMP test in Zabbix, which will be displayed as follows:

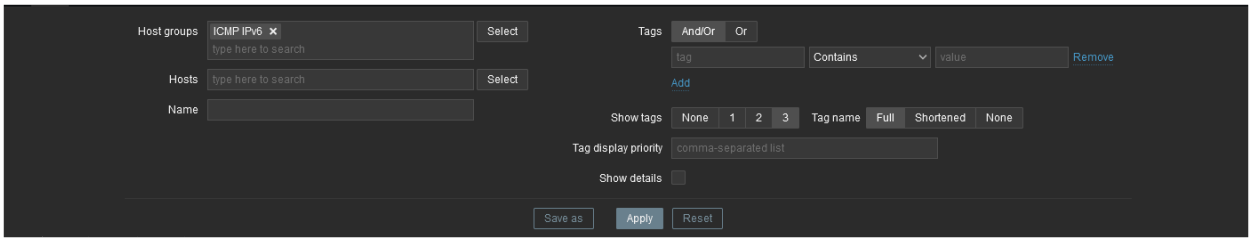


If we wish to include another host with the same characteristics, we can either repeat the steps listed above or access the previous resource, where we will find a "**Clone**" option. As the name suggests, by clicking on this option the previously created host will be duplicated. To create a new host, all we need to do is change the IPv6 address and the name of the new host.

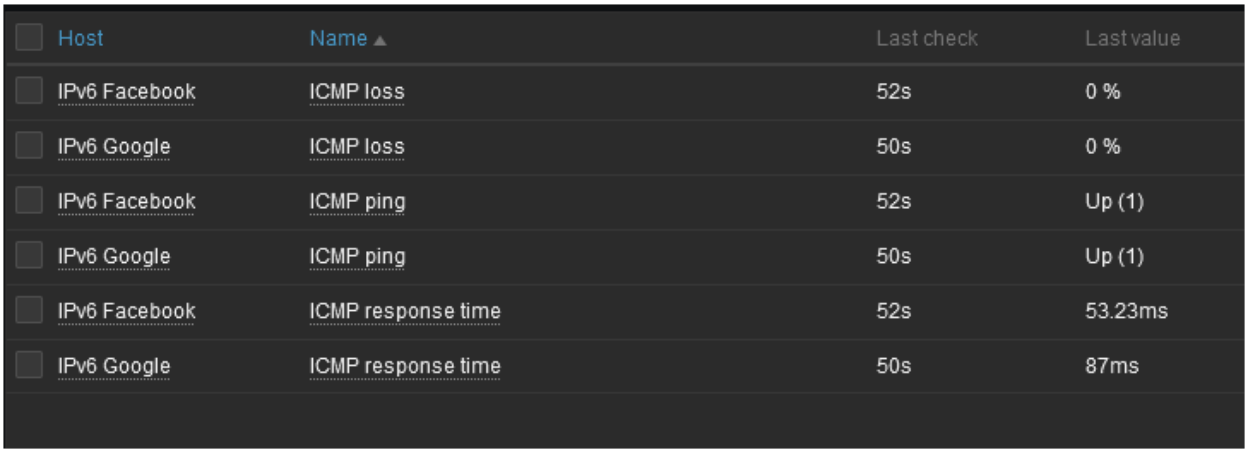


Using Filters in Zabbix

Once Zabbix has started monitoring, to see the data it has to offer we must go to the "**Monitoring**" section and find the "**Latest data**" subsection. Once there, we can use the search filters. In this case, we will search by Host groups.



Once the filter is applied, at the bottom we will see the data collected by our Zabbix server.



Graphs in Zabbix

In addition to providing detailed data, Zabbix can also create graphs. This allows us to view and understand the behavior of the resources we monitor. In IPv6-only environments, these graphs are particularly important, as they allow us to observe the evolution of a resource over time, which is very useful for detecting trends and making informed decisions.

A very useful feature of Zabbix are the filters it offers for viewing data according to our needs. This makes it easier to interpret IPv6 sensors and resources.

Conclusions

In this article we explored the capabilities of the Zabbix monitoring tool in IPv6-only networks. We saw that Zabbix not only provides detailed data and graphs but can also be used as a tool for decision making. As IPv6 adoption advances, having monitoring tools that allow us to guarantee the stability and efficiency of our networks is essential.

Do you believe that monitoring your network is important?